भारतीय मानक
Indian Standard

IS 3245 : 2021

डिब्बाबंद मटर — विशिष्टि

(पहला पुनरीक्षण)

Canned Peas — Specification

(First Revision)

ICS 67.080.20

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भारतीय मानक ब्यूरो
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Fruits, Vegetables and Allied Products Sectional Committee, FAD 10

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fruits, Vegetables and Allied Products Sectional Committee had been approved by the Food and Agriculture Division Council.

Canned peas are one of the most important processed vegetables. There is ample scope for the development of external as well as the internal trade. It is, however, necessary to ensure the quality of the product, if the demand is to be maintained and further developed. In order to ensure proper quality, it is necessary to have strict quality control based on specifications. It was, therefore, found necessary to formulate an Indian Standard specification for this product.

This standard was first published in 1965. This revision is being carried out to harmonize the standard with *Food Safety and Standards Act*, 2006 and regulations framed thereunder and also to incorporate some other changes. In this revision the following major changes have been made:

a) Method for determination of drained weight has been added (Ref: FSSAI Manual of methods of analysis of foods – Fruit and Vegetable Products);
b) Table 2 specifying the size and capacities of cans has been deleted; and
c) The microbiological requirements have been added as per *Food Safety and Standards (Food Products Standards and Food Additives) Regulations*, 2011.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the *Rules* and *Regulations* framed thereunder and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for the formulation of this standard is given at Annex D.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

CANNED PEAS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes the requirements for peas (*Pisum sativum* L.) canned in brine.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	*Title*
1993 : 2018	Cold — Reduced tinmill products — Electrolytic tinplate (*fifth revision*)
2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
2860 : 1964	Methods of sampling and test for processed fruits and vegetables
5887 (Part 3) : 1999	Methods for detection of bacteria responsible for food poisoning: Part 3 General guidance on methods for the detection of *Salmonella* (*second revision*)
5887 (Part 5) : 1976	Methods for detection of bacteria responsible for food poisoning: Part 5 Isolation, identification and enumeration of *Vibrio cholerae* and *Vibrio parahaemolyticus* (*first revision*)
14397 : 1996	Methods for detection, isolation and identification of pathogenic *E. coli* in foods
14988 (Part 1) : 2001	Microbiology of food and feeding stuffs — Horizontal method for detection and enumeration of *Listeria monocytogenes*: Part 1 Detection method
16284 : 2014	Spoons — Specifications

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Head Space — The distance between the top of the double seam and the level of the surface of the contents.

3.2 Absence of Defects — The degree of freedom from extraneous material, such as pea pods and thistle buds.

3.3 Unbroken Pea Seed — The pea seed, the two cotyledons of which are held together by the skin, even though the cotyledons may be cracked or the skin split.

3.4 Blemished Pea Seeds — Units blemished with some injury, such as worm-hole, insect damage, discolouration, pathological and hail injury, spotted or otherwise discoloured peas (creamy white or vivid green) or any other abnormality readily visible to the naked eye to a noticeable degree.

4 TYPES

4.1 Canned peas shall be prepared from fresh garden peas of the following two types:

a) Smooth-skin or round-seed varieties, and
b) Wrinkled seed varieties which have a natural sweet flavour.

5 GRADES

5.1 Canned peas shall be of two grades, namely, Grade 1 and Grade 2.

6 REQUIREMENTS

6.1 Hygienic Requirements

The material shall be prepared and handled under strict hygienic conditions by persons free from contagious and infectious diseases and only in premises maintained in a thoroughly clean and hygienic condition and having adequate and safe water supply and duly approved and licensed by the public health authorities concerned. All workers shall use clean, and washed clothing (*see* IS 2491). Necessary precautions shall be taken to prevent incidental contamination of the product from soiled equipment or from personnel suffering from injuries.

6.1.1 All equipment coming in contact with raw materials or product in the course of manufacture shall be kept clean. An ample supply of steam and water, hose, brushes and other equipment necessary for proper cleaning of machinery and equipment shall be available. The equipment may be sterilized by immersion in, or swabbing with, hypochlorite or other suitable chlorine solution.

6.2 General

Canned peas shall be prepared from tender, fresh garden peas at the proper stage of maturity and of similar varietal characteristics.

6.3 Freedom from Preservatives, Artificial Colouring Matter and Flavouring Agents

The material shall be free from preservatives and artificial flavouring agents. Permitted colours and mint leaves for flavouring may be used.

6.4 Requirement for Covering Brine

The covering brine shall be clear. The substance that may be added to the covering brine are edible common salt (sodium chloride, potassium chloride or combination), with or without a small quantity of sucrose and citric or tartaric acid not exceeding 0.1 percent of the packing medium.

6.5 Requirements for the Finished Product

The contents of the can on opening shall display the following characteristics:

a) *Grade 1* — The canned peas shall possess a good, characteristic and practically uniform colour, shall be practically uniform in size, shall be practically free from defects, shall be practically free from loose skins and splits, shall possess a good characteristic texture and normal flavor and shall be of such quality with respect to clarity of covering liquor as to score not less than 85 points.

b) *Grade 2* — The canned peas shall possess a characteristic and reasonably uniform colour, shall be reasonably uniform in size, shall be reasonably free from defects, shall be reasonably free from loose skins and splits, shall possess a characteristic reasonably good texture and normal flavour and shall be of such quality with respect to clarity of covering liquor as to score not less than 75 points.

The maximum and the minimum number of points to be scored by different factors shall be as given below:

	Maximum	Minimum	
		Grade 1	Grade 2
Colour	25	15	13
Texture and uniformity of size	25	19	16
Taste and flavor	20	15	13
Absence of defects	35	26	23

Scoring shall be done according to the method prescribed in Annex A.

6.5.1 *Colour*

a) *Grade 1* — The units shall possess a good, practically uniform colour, characteristic of peas of the proper maturity, which means that the colour shall be pale green to green, shall be practically free from any discolouration due to improper handling or processing or other causes. Uneven distribution of pigments and change in color normally associated with proper processing shall not be considered

b) *Grade 2* — The units shall possess a good, reasonably uniform colour, characteristic of peas of the right stage of maturity, which means that the colour shall be pale green to green, shall be reasonably free from any discolouration due to improper handling or processing or other causes. Uneven distribution of pigments normally associated with proper processing shall not be considered as defects.

6.5.2 *Texture and Uniformity of Size*

a) *Grade 1* — The units shall possess a practically tender texture, which means that the units shall be just firm but not hard and shall be characteristic of the peas which are of the proper stage of maturity. The units shall be practically uniform in size.

b) *Grade 2* — The units shall possess a reasonably tender texture, which means that the skins of not more than 5 percent by count of the peas shall be ruptured and the units shall be reasonably firm, but not hard. The peas shall normally be not starchy and over mature and the units shall be reasonably uniform in size.

6.5.3 *Taste and Flavour*

a) *Grade 1* — The units shall possess taste and flavour characteristic of tender peas and the variety used. The units shall be completely devoid of any objectionable or off taste, smell or odour, such as sulphide odour, sourness, off-taste and staleness.

b) *Grade 2* — The units shall possess taste and flavour characteristic of tender peas and the variety used. The units shall be devoid of any objectionable or off-taste, smell or odour, such as sulphide odour, sourness, off-taste and staleness.

6.5.4 *Absence of Defects*

a) *Grade 1* — The units shall be practically free from defects, which means that there shall be present no extraneous vegetable material, not more than 5 percent by count of broken peas, not more than one percent by count of spotted or otherwise discoloured peas. The covering brine shall be practically clear, practically free from cloudiness, blackening or thickening and practically free from sediment.

b) *Grade 2* — The units shall be reasonably free from defects, which means that there shall be present extraneous vegetable material not more than 0.25 percent of the drained weight of peas, not more than 10 percent by count of broken peas, not more than 2 percent by count of spotted or otherwise discoloured peas. The covering brine shall be reasonably clear, which means that the liquor may be slightly cloudy and may possess a small quantity of sediment.

6.5.5 The material shall also conform to the requirements prescribed in Table 1.

6.5.6 The product shall also conform to the microbiological requirements prescribed in Table 2.

6.5.7 The product shall comply with the requirements of pesticide residues, heavy metals, aflatoxins, etc, as prescribed in *Food Safety and Standards Act*, 2006 and the Rules and Regulations made thereunder.

7 PACKING AND MARKING

7.1 Packing

7.1.1 The material shall be packed in cans made of tin plate conforming to IS 1993. The cans shall be either plain or lacquered internally and hermetically sealed. When lacquered externally, the portion under the label, except the side seam, shall also be lacquered. The internal lacquer shall be sulphur resistant and shall not be destroyed, altered or its components transferred to the material inside the can during processing or subsequent storage or transport. The can exterior shall be free from dents, rust, perforations and seam distortions. The cans shall not how leaking, panelling or swell. The interior of the can shall not show any visible black discolouration, rusting or pitting and the inside lacquer shall be in good condition. Normal feathering shall not be considered as a defect. Or the material shall be packed in clean, hygienic, colourless, transparent and temper proof sterile glass bottle suitable for preventing possible contamination of the material.

7.1.2 The cans shall be filled with the material, without impairment of quality. In case containers other than those specified in Table 2 are used, the size of the container and the net weight of the contents shall be as agreed to between the purchaser and the vendor.

7.1.3 *Packing in Cases*

The cans shall be packed as agreed to between the purchaser and the vendor.

7.2 Marking

Each can shall be marked with the following particulars:

a) Name, type, style and grade of the material with the brand name, if any;
b) Name and address of the manufacturer;
c) Net quantity;
d) Month of manufacture or code number indicating the month of manufacture;
e) List of additives, if used;
f) Best before date;
g) Storage conditions and temperature;
h) Manufacturing licence number; and
j) Any other requirement as stipulated under *Food Safety and Standards Act*, 2006 and Rules and Regulations framed thereunder and *Legal Metrology Act*, 2009 and Rules framed thereunder.

Table 1 Requirements for Canned Peas

(*Clauses* 6.5.5)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Vacuum of the can in mm, *Min*	125	Clause 5 of IS 2860
ii)	Head space of the can in mm, *Max*	16	Clause 6 of IS 2860
iii)	Drained weight of the contents of the can, as percentage of the net weight, *Min*	50	Annex B
vii)	Arsenic, ppm, *Max*	1.1	Clause 13 of IS 2860
viii)	Lead, ppm, *Max*	1.0	Clause 14 of IS 2860
ix)	Copper, ppm, *Max*	30	Clause 15 of IS 2860
x)	Zinc, ppm, *Max*	19	Clause 16 of IS 2860
xi)	Tin, ppm, *Max*	250	Clause 17 of IS 2860

Table 2 Microbiological Requirements for Canned Peas

(*Clause* 6.5.6)

Sl No.	**Characteristic**	**Requirement**				**Method of Test, Ref to IS**
		Sampling Plan[1]		Limit (cfu)		
		n	**c**	**m**	**M**	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
(i)	*Salmonella*	5	0	Absent/25g	NA	5887 (Part 3)
(ii)	*Listeria monocytogenes*	5	0	Absent/25g	NA	14988 (Part 1)
(iii)	*E. Coli* O157 and Vero or Shiga toxin producing *E. coli*	5	0	Absent/25g	NA	14397
(iv)	*Vibrio cholerae*	5	0	Absent/25g	NA	5887 (Part 5)

[1] For sampling plan *see* Annex C

7.2.1 Each packing case shall also be marked with the following particulars:

a) Name of the product;
h) Name of the manufacturer;
c) Manufacturing licence number; and
d) Number of cans × weight of each can.

8 SAMPLING

Representative samples of the material shall be drawn and tested for conformity to this standard by the method prescribed in **3** of IS 2860.

ANNEX A

(*Clause* 6.5)

DETERMINATION OF GRADE OF THE PRODUCT

A-1 APPARATUS

A-1.1 White Porcelain Flat Trays — Big enough to hold the contents of the can under examination.

A-1.2 Stainless Steel Spoons — Table spoons (*see* IS 16286).

A-2 PROCEDURE

A-2.1 Panel of Judges

Judging for grading the product shall be done by a panel of three to five judges. All the judges constituting a panel shall be conversant with the factors governing the quality of the product. The cans shall be opened and the contents poured separately into white porcelain flat trays. Each judge shall independently examine the contents from each of the cans and assign scores for different characteristics.

A-2.1.1 The judges shall consider these characteristics: colour, texture and uniformity of size, taste and flavour, and absence of defects.

A-2.2 System of Scoring

The variations within each factor are so described that the scores may be ascertained for each factor and expressed numerically. The relative importance of each factor has been expressed numerically on a scale of 100. Each judge shall give a score for the individual factors by the method described in Table 3 and record his observations in the score sheet for individual judge (at the end of the Annex A).

A-2.2.1 The scores as number of points given on the Score Sheet by the judges for the contents of each can for the four factors shall be recorded in a tabular form in the score card (at the end of the Annex A) and the average score calculated for each factor with overall average for each can entered in the appropriate column of the score card after complying with the conditions specified in **A-2.3.1** and **A-2.3.2**.

A-2.3 Ascertaining the Grade

A-2.3.1 *Agreement Among Judges*

To ascertain the consistency of judgment among the judges, the total score assigned by each of them for the contents of the same can shall be calculated by adding up the scores for the various individual characteristics. If the difference between the maximum and the minimum of the total score so obtained does not exceed (K + 5), where K is the number of judges, the scoring shall be deemed as consistent for the can under consideration. If the difference exceeds (K + 5) the most outlying score, that is, the one which is farthest from its immediate neighbour (the scores being arranged in one order), it shall be discarded and the consistency among the remaining judges examined.

A-2.3.2 When the consistency is thus established (**A-2.3.1**), the overall average scores given by the judges, whose scoring has been found to be consistent, shall be calculated for each can. The average score for each of the individual characteristics shall also be calculated by taking into account the corresponding scores as given by the same judges for the contents of the same can.

A-2.3.3 *Assignment of Grade*

In order to assign a grade for the contents of a can, the following procedure shall be adopted:

a) *For Grade 1* — The score for each factor individually (**A-2.3.2**) shall be not less than 75 percent of the maximum score obtainable and the overall average score shall be not less than 85 points.

b) *For Grade 2* — The score for each factor individually (**A-2.3.2**) shall be not less than 65 percent of the maximum score obtainable, and the overall average score shall be not less than 75 points.

Table 3 Method for Giving Scores for Canned Peas

(*Clause* A-2.2)

Organoleptic Characteristics	Requirements	Maximum Number of Points	Properties Which Reduce the Value	Points Reducing the Value Up to
(1)	(2)	(3)	(4)	(5)
Colour	Good, pale green to green peas of proper maturity: free from discolouration due to improper handling or processing or other causes.	15	Not quite uniform, lightly varying shades of the characteristic colour, slight discolouration.	11
			Non-uniform, some peas slightly greenish yellow, discolouration.	10
			Dull, non-uniform, varying considerably in shades, discolouration (total).	0
*Texture and uniformity of size	Tender which means peas are just firm but not hard mature; not starchy; unbroken units. Uniform in size.	30	Not quite tender, one or two broken ruptured units permitted. Almost uniform size.	23
			Firm slightly starchy indicative of being over mature, broken units not exceeding 5 percent by count. Peas slightly varying in size.	20
			Hard, broken, ruptured units. Not uniform in size.	0
Taste and flavour	Taste and flavor characteristic of tender peas; free from objectionable or off taste, smell or odour, such as sulphide odour. Free from sourness, staleness or metallic taste.	20	A slight variation in the normal flavour, a trace of metallic taste.	15
			Taste indicative of over-mature peas ; trace of sulphide odour, slightly sour smell, may be stale.	13
			Off taste, strong sulphide odour, with strong metallic taste, stale.	0
†Absence of defects	Free from defects; free from broken or disintegrated units; free from extraneous material; free from spotted or discoloured units Covering brine shall be clear, free from cloudiness, blackening or thickening and free from sediment.	35	Broken units up to 5 percent by count; spotted or discoloured peas up to 1 percent by count. Very slight sedimentation in brine.	26
			Broken units up to 10 percent by count; spotted or otherwise discoloured peas 2 percent by count. Up to 0.25 percent of the drained weight of extraneous material. Brine slightly cloudy.	23
			Blemished units more than 10 percent; brine thick, cloudy, blackened	0

*While rating 'Texture and Uniformity of Size', texture may be allotted 20 points and uniformity of size, 10 points.

†While rating, 'Absence of Defects' a tentative maximum score of 15 points for absence of blemishes. 5 for absence of peel and core, 5 for absence of extraneous matter and 10 for clarity of covering syrup may be considered.

SCORE SHEET FOR INDIVIDUAL JUDGE

Sample No ....
Date of Sampling ....

DETAILS OF THE SAMPLE: a) Product .... b) Name of the Manufacturer .... c) Type ....

d) Batch No .... e) Date of Manufacture ....

FACTORS	SCORE POINTS	SAMPLE CANS									
		1	2	3	4	5	6	7	8	9	10
Colour	$\frac{\text{Grade 1}:15-20}{\text{Grade 2}:13-14}$										
Texture and uniformity of size	$\frac{\text{Grade 1}:19-25}{\text{Grade 2}:16-18}$										
Taste and flavour	$\frac{\text{Grade 1}:15-20}{\text{Grade 2}:13-14}$										
Absence of defects	$\frac{\text{Grade 1}:26-35}{\text{Grade 2}:23-25}$										

Signature of the Judge with Date ....

SCORE CARD

Sample No...........................
Date of Sampling................

DETAILS OF THE SAMPLE: a) Product........... b) Name of the Manufacturer.................... c) Type................

d) Batch No......... e) Date of Manufacture...................

FACTOR	COLOUR					TEXTURE AND SIZE					TASTE AND FLAVOUR					ABSENCE OF DEJECTS					TOTAL SCORES					AVERAGE SCORE FOR					GRADE OF THE CAN
JUDGE CAN NUMBER	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	Colour	Texture and Uniformity of Size	Taste and Flavour	Absence of Defects	Total	

ANNEX B

(*Table* 1)

DETERMINATION OF DRAINED WEIGHT

B-1 PRINCIPLE

The sample is drained on a standard mesh sieve. The weight of the material remaining on the sieve is expressed as percentage of the can contents.

B-2 APPARATUS

Sieve with square openings, 2.5 mm × 2.5 mm (No. 6 B.S.). Use a sieve of 20 cm if the total weight of contents is under 1.5 kg and of 30 cm if the weight is more than 1.5 kg.

B- 3 PROCEDURE

Weigh the full can. Open and pour the entire contents on a circular sieve. Without shifting the product, incline the sieve to facilitate drainage. In the case of products with a cavity, such as peach halves, invert if necessary, so that the liquid can drain through the cavity but otherwise the product should not be disturbed. Drain for two minutes.

Weigh the drained solids and the empty can.

$$\% \text{ Drained Weight} = \frac{\text{Drained weight}}{\text{Net weight of contents}} \times 100$$

Net wt. of contents = Gross weight – tare weight of the can

For canned tomatoes use a sieve with square openings of 11.2 mm × 11.2 mm

For products in sauce, use a sieve with square openings of 0.3 mm × 0.3 mm.

Wash the contents on the sieve with water until free of adhering substances. Spread on sieve and drain for 5 min, dry the underside of the sieve and weigh.

Table for Sieve Size

Method	Capacity of container	Sieve Diameter, mm	Mesh opening, mm	Draining time, min
Canned fruits and vegetables	a. Less than 850 ml	20	2.5 × 2.5	2
	b. Above 850 ml	30	2.5 × 2.5	2
Canned tomatoes	a. Less than 850 ml	20	11.2 × 11.2	2
	b. Above 850 ml	30	11.2 × 11.2	2
Other Products in Sauce		20	0.3 × 0.3	5

ANNEX C

(*Clause* 6.5.6, *Table* 2)

SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

C-1 SAMPLING PLAN FOR MICROBIOLOGICAL REQUIREMENTS

The terms n, c, m and M used in this standard have the following meaning:

n = Number of units comprising a sample;

c = Maximum allowable number of units having microbiological counts above m for 2- class sampling plan and between m and M for 3-class sampling plan;

m = Microbiological limit that separates unsatisfactory from satisfactory in a 2- class sampling plan or acceptable from satisfactory in a 3-class sampling plan; and

M = Microbiological limit that separates unsatisfactory from satisfactory in a 3-class sampling plan.

C-2 INTERPRETATION OF RESULTS

2 - Class sampling plan (where n, c and m are specified)	3 - Class sampling plan (where n, c, m and M are specified)
1. Satisfactory, if all the values observed are < m	1. Satisfactory, if all the values observed are < m
2. Unsatisfactory, if one or more of the values observed are > m or more than c values are > m	2. Acceptable, if a maximum of c values are between m and M and the rest of the values are observed as < m
	3. Unsatisfactory, if one or more of the values observed are > M or more than c values are > m

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Fruits, Vegetables, and Allied Products Sectional Committee, FAD 10

Organization	*Representative(s)*
ICAR-Indian Institute of Horticultural Research, Bengaluru	Dr M. R. Dinesh (***Chairman***)
All India Food Processors Association, New Delhi	Dr R. K. Bansal Shrimati Mamta Arora (*Alternate*)
Association of Food Scientists and Technologists India, Mumbai	Dr Revathy Baskaran Dr K. V. Harish Prashanth (*Alternate*)
CSIR-Central Food Technological Research Institute, Mysore	Dr P. Vijayanand Dr A. S. Chauhan (*Alternate*)
College of Agricultural Engineering Post-Harvest Technology, Gangtok	Dr Sujata Jena Dr Said Prashant Pandharinath (*Alternate*)
Confederation of Indian Food Trade and Industry, New Delhi	Shrimati Priyanka Sharma
Consumer Guidance Society of India, Mumbai	Dr Sitaram Dixit Dr M. S. Kamath (*Alternate*)
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